

E-government Use and Citizen Empowerment: Examining the Effects Of Online Information On Political Efficacy

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Abstract: Although the government has made enormous investments in the area of e-government, whether these efforts do indeed promote greater citizen participation is still being debated between those optimistic and those pessimistic about ICT's potential to change the way people interact with government. This study hopes to bring forth a new perspective, by injecting new empirical evidence, to revitalize discussions between opposing views on ICTs, by arguing that information technology could elevate "political efficacy" and indirectly enhance political participation. This research attempts to answer the following questions: "Does e-government use increase citizen's political efficacy?" "What are the different influences e-government mechanisms have on internal and external Internet political efficacy?". A regression analysis was used as the method for analyzing data collected from a telephone survey of all Taiwanese citizens above the age of twelve, and with experiences in the use of e-government services. The results show that factors which affect internal and external Internet political efficacy are different. The enhancement of external Internet political efficacy factors are not directly related to the e-government mechanism, but are related to citizens' trust in e-government, political trust, and external political efficacy. Whereas information update speed by e-government and citizen usage needs for e-government factors, affect internal Internet political efficacy. The conclusions reached, in theory, would provide a new angle of reflection and research for the debate on the influences of technology use on civil participation, by technological optimists and pessimists. This new angle suggests that the effects of technology use are on the perceptions and attitudes related to civil participation, and not directly related to participation behaviors. In practice, this generates another urgent reason for the government to invest additional resources in the elevation of internet information quality.

Keywords: political efficacy, e-government, citizen empowerment, political participation , use of e-government, information quality

1 Introduction

Since the 1990s, Information and Communication Technologies (ICTs) have become popular instruments for delivering government services as well as tools for encouraging citizen participation. Despite enormous governmental investments in the area of e-government, whether these efforts do indeed promote greater citizen participation is still being debated between those optimistic and those pessimistic about ICT's potential to change the way people interact with the government. Most discussions emphasize the feasibility of ICTs to elevate political participation, using "the usage of ICTs" as the independent variable to explore its influence on political participation (the dependent variable). Many techno-optimists believe that information technology lowers participation costs, and can mobilize people who had been excluded from the policy-making process due to high participation costs. These citizens would be able to participate in democracy, through the Internet, and this would in turn, resolve the problem of inequitable political influence. However, this view has been countered by recent issues, such as the digital divide, the low willingness of citizens to participate in politics, and the reality that the Internet is generating greater reinforcement effects than mobilization effects. These issues seem to indicate that the techno-pessimist arguments are regaining the upper hand.

In view of the controversy between the techno-optimists and techno-pessimists, this study hopes to bring forth another perspective to inject new empirical evidence to revitalize discussions between the two. The main point of this article is to investigate whether the results of the development of information technology, aside from the "direct" effect of enhancing political participation, as expected by techno-optimists, due to the advancement of online public participation channels (such as Internet public forums, Internet voting, online survey, e-petitions), demonstrate that information technology may also elevate "political efficacy" and

indirectly enhance “political participation.” However, questions regarding whether this effect has been produced, how can it be theorized, and how is it proved with empirical evidence, have frequently been overlooked, and there has not been much literature generated on these questions. Therefore, this study will focus on “political efficacy”, and explore its causal relationship between information and communication technologies, especially regarding the operation of e-government.

According to information theory, as the cost of information seeking falls and the average citizen’s knowledge rises, a person’s probability to participate goes up (Matsusaka, 1995; Tolbert & Mcneal, 2003). This viewpoint includes three elements: lowered cost for information searching, elevated knowledge, and elevated political participation. The connection is that information searching enhances knowledge, which then affects political participation. In fact, “elevation of knowledge” could be thought of as the internal political efficacy aspect in political science. In other words, using the perspective of “political efficacy” to explain why knowledge elevation would affect political participation would clarify the correlation between these variables. This is because political efficacy is the second most important independent variable of the political participation model (Abramson, 1983). Many studies believe that citizens with higher political efficacy are more likely to participate in politics (Tedesco, 2007; Kenski & Stroud, 2006; Pinkleton, Austin, & Fortman, 1998). If the inference mentioned above is reasonable, the research agenda/question becomes the following: whether the utilization of information technology and the development of e-government can elevate the political efficacy of citizens as theoretically predicted? What type of political efficacy would be elevated? These questions have not been clearly answered.

In the past, even though much literature on political efficacy has been accumulated, most of the focus has been on political efficacy in the tangible realm. There has been little direct discussion of “political efficacy arising from the Internet.” Although, there are some studies that focus on the influence of e-government on political efficacy, there is still only a limited number of empirical studies (Tolbert & Mossberger, 2006), not to mention model distinctions that compare “internal” and “external” efficacy in detail.

In summary, this is still an unanswered question. Owing to the advent of the Internet, technology optimists believe ICTs have the potential to increase political efficacy. For example, Tedesco (2007) found that highly interactive web design resulted in significant increase in political information efficacy. K.M Lee’s research (2006) also displayed a positive association between information related Internet use and internal political efficacy. However, some technology skeptics argue that the effect of the Internet is limited. For example, Scheufele and Nisbet (2002) found political information seeking to be unrelated to feelings of political efficacy. They only agree that the Internet ‘normally’ has great potential to mitigate certain shortcomings of traditional communication channels by overcoming space or time constraints (Parent, Vanebeek, & Gemino, 2005).

Thus, the research question of this article is: “Does the use of e-government increase citizen’s political efficacy?” Also, what are the different influences e-government mechanisms have on internal and external Internet political efficacy? On the one hand, in terms of academic objectives, it is hoped that this would supplement insufficient attention for Internet political efficacy in the past, and to understand factors that may affect Internet political efficacy for the future elevation of Internet political efficacy. This would in turn promote civic participation, and help shape a civic society. On the other hand, in practice, this study hopes to observe the existing shortcomings of e-government, to provide possible means to enhance political efficacy, and to strengthen the service quality of e-government.

This paper is organized into four major parts: first, related past studies is discussed and reviewed, in order to integrate past achievements from the literature and to understand possible inadequacies to clarify the orientation of this study. Second, the research methodology is explained. Third, the data analysis and related discussions is clarified. Finally, research conclusions are discussed and policy suggestions proposed.

2 Literature review

In the literature review section, this study will first explain the significance of political efficacy on civic participation, and further discuss the possible influence of information on political efficacy. Finally, this study will review past studies that examine the influence of e-government on political efficacy.

3 Political efficacy and political participation

The concept of political efficacy, as proposed by Campbell, Gurin, and Miller (1954, p. 187) (cited from Kenski & Stroud, 2006, p. 174), is described as “the feeling that political and social change is possible, and that the individual citizen can play a part in bringing about this change”. Political efficacy can be further divided into two forms. Neimi, Craig and Mattei (1991, pp. 1407-1408) (cited from Kenski & Stroud, 2006, pp. 174-175) explained that internal political efficacy refers to “beliefs about one’s own competence to understand, and to participate effectively in, politics”, whereas external political efficacy refers to “beliefs about the responsiveness of government authorities and institutions to citizen demands.” Simply put, political efficacy is a subjective perception held by citizens toward the government system. Thus, many past studies believe that political efficacy is a significant factor influencing civic participation (Kenski & Stroud, 2006). The increase in the political efficacy of citizens corresponds to an increase in their political participation (Pinkleton, Austin, & Fortman, 1998). Thus, to fulfill the ideal of promoting civic participation and developing civil society, it is necessary to begin with political efficacy.

Therefore, in order to understand the use of e-government mechanisms for the elevation of civic participation, the intermediary role of political efficacy cannot be overlooked. In other words, the effect of civic participation promoted by e-government may in part result from increasing political efficacy. This paper assumes that once e-government can increase political efficacy, citizens can increase their participation behavior. Thus, this study seeks to first consider the influence of e-government on political efficacy, in order to supplement existing civic participation theory.

4 Information theory

Many past studies believed that the elevation of political efficacy is dependent upon the provision of information: The decrease in cost for obtaining information would be beneficial for the elevation of civic knowledge. This would in turn increase the political efficacy of citizens (Matsusaka, 1995). As stated by Semetko and Valkenburg (1998), the acquisition of information is crucial for the elevation of political efficacy: the higher the citizens’ concern for political information, the higher the internal political efficacy. Pinkleton, Austin and Fortman (1998) also believed that when citizens acquire more information and knowledge, there would be higher political efficacy.

However, past studies of information on political efficacy tend to remain in the tangible world. They generally focus on information provided by newspapers and television media (e.g. Semetko & Valkenburg, 1998), and less on information provided through the Internet. For example, Pinkleton, Austin and Fortman (1998) discovered that utilization of television information has a positive influence on political efficacy. The study by Chen and Lien (2008) pointed out that people who pay more attention to television and communications media report having a higher external political efficacy, and that the influence of television is greater than that of newspapers. However, with the increase of the usage of Internet, more and more citizens obtain their information from the web. Also, as stated by Curtice and Norris (2004), the Internet provides information that is of high proximity, which can enhance the political efficacy of citizens. Thus, this study seeks to supplement past studies by using “information” provided by e-government to explore the influence of Internet information on the political efficacy of citizens.

5 E-government: A great opportunity to improve political efficacy?

The development of government affairs in the digital direction has been proceeding for more than 20 years since 1990. The scope of e-government is extensive: from the emphasis on customer service functions, such as online services and the provision of information, to the emphasis on political participation and enhancement of the quality of democracy via e-democracy. All of these resulted from the digitalization of government affairs (Mahrer and Krimmer, 2005; Bishop and Anderson, 2004; Backus, 2001; Chadwick, 2003; Lenihan, 2005). According to the categorization by Sakowicz (2004), digitization of government affairs includes electronic services, electronic management, electronic business, and electronic democracy. Of which, electronic management primarily focus on the internal aspect of organizations (G2G), electronic business focus on the relationship with the business sector (G2B), and e-service and e-democracy focus on the people (G2C).

Early discussions on e-government generally focus on how to use information and communication technology to elevate administrative efficiency, effectiveness and government responsiveness, or to increase satisfaction of the people. In recent years, a lot of literature has started to focus on the influence of e-government on the

quality of democracy. Discussing how to use information technology to promote, improve, and even expand the realization of democracy, or the concept of e-democracy. E-democracy has two major meanings: the first meaning is to design and use information and communication technologies to elevate the practice of democratic politics. The second and deeper meaning is to use the dissemination of information and communication technologies to elevate the vitality and legitimacy of democracy (Shane, 2004). Caldwell (2004) argued that types of e-democracy can be divided into unidirectional provision of information, bidirectional channels with feedback mechanisms, and partnerships that allow citizens to participate in policy creation. The policy objectives of e-democracy include (OECD, 2003):

- Come into contact with a greater number of people and opinions in the policy process.
- Provide more accurate and suitable policy-related information to the people.
- Elicit more in-depth consultations and discussions.
- Use electronic means to conduct democratic participation, in the hopes of quickly organizing the opinions of the people.
- Provide related and appropriate responses to citizens.
- Monitor procedures and make evaluations at any time.

This study places the emphasis on the second policy goal: information provision of e-government. Past discussions on the relationship between information and communication technologies and democratic politics, generally bypass the aspect of information increasing the political efficacy of citizens, and directly discuss the influence of ICTs' usage on democratic participation. This overlooks the importance of "political efficacy" on civic participation.

Even though there have been studies on the possible influences of e-government on the political efficacy of citizens, there has been no consensus on what the influence is. Parent, Vanebeek and Geminio (2005), West (2004), Kenski and Stroud (2006) all believed that the e-government mechanism has a positive influence on political efficacy of citizens; Lee (2006) believed that usage of Internet information and the interactivity of the Internet can elevate the internal political efficacy of citizens. Tolbert and Mossberger (2006) also believed that through increasing citizen trust in the government it would be possible to increase political efficacy, since e-government can increase opportunities for citizen participations, increase communication between citizens and the government, and increase the possibility of making information more open. Montagna (2005) pointed out that the benefits of e-government not only simplified administrative procedures for the government, but also for the citizens. E-government is a key to promote the abilities of citizens and to enhance the political efficacy of citizens. Tedesco (2007) believes that the more citizens come into contact with e-government websites, especially those with higher interactivity, the higher their political efficacy.

However, there are also scholars who believe that e-government not only does not necessarily elevate the political efficacy of citizens, it may even have negative effects. Scheufele and Nisbet (2002) discovered that the act of researching political information by citizens on the Internet is not directly related to their political efficacy. Thus the Internet has a limited influence on political efficacy, because acquisition of information cannot ensure its usage. Coleman, Morrison, and Svennevig (2008) believed that although e-government can increase interaction between citizens and the government, if the government is insufficiently responsive to citizens, it would have a negative effect on political efficacy. Lee (2006) also found that the interactive experience of citizens with government agencies through the Internet actually decreases their external political efficacy.

In sum, there has not yet been a consensus on whether e-government has had a positive or negative effect on the political efficacy of citizens. Techno-optimists believe that government usage of the Internet can effectively elevate political efficacy. On the one hand, since the Internet increases the opportunities for contact between citizens and government officials, citizens have the chance to make the government accountable. This should have a positive effect on external political efficacy. On the other hand, the Internet elevates the proximity of information, and due to its provision of anonymity, allows people to be less afraid of insufficient ability. This provides a positive influence on internal political efficacy as well. However, techno-pessimists believe that since responses by the government over the Internet are not required/legally binding, it would conversely decrease external political efficacy. Further, the Internet often faces the problem of information overload, along with the difficulty of ensuring the acquisition of accurate information. This would actually lower the

internal political efficacy of citizens. The negative influence is even more significant for those with lower education levels and those who do not use the Internet frequently (Kenski & Stroud, 2006, pp. 175-176).

Thus, this study seeks to use the operational experiences of Taiwan's e-government to observe the influence of e-government on the political efficacy of citizens, and to analyze whether the same results of past studies can be reached. This study seeks to supplement past studies, of which few empirical researches on the influence of e-government on internal as well as external political efficacy has been made.

6 Research Framework and Methods

The literature review shows that there have not been many studies on Internet political efficacy, and there is no consensus of how e-government affects political efficacy. Therefore, this study seeks to explore the results of government usage of the Internet, and to analyze the different influences that could impact the internal and external Internet political efficacy of citizens.

Past studies show that the Internet influences political efficacy in great part because the Internet provides abundant "information." Thus, this study uses e-government information as the primary independent variable to observe the possible influences of "accuracy of information", "update speed of information", and "comprehensibility of information" provided by government websites on the political efficacy of citizens.

In exploring the influence of e-government on political efficacy, other than quality of information provided by e-government, it is also necessary to consider the possible influence of citizen trust and the usage needs of citizens. First, in terms of citizen trust, as stated by Stowers (2004), citizens' trust in the government would affect their attitudes toward e-government. Pinkleton, Austin and Fortman (1998) also pointed out that the less citizens trust politics, the lower the political efficacy. Thus, when constructing the research framework, this study incorporates citizens' trust, and observes whether "trust in e-government websites" (trust in government websites "confidentiality" and "security"), and the "political trust" of citizens (trust in "government" and "politicians") would affect the political efficacy of citizens.

Secondly, in terms of "usage needs" of the citizens, as Peng and Zhu (2008) pointed out, citizens with higher Internet usage needs and more frequently usage of the Internet have higher political efficacy. Thus, this study will use the frequency by which citizens use the Internet to collect information to observe whether Internet usage needs would affect Internet political efficacy.

Finally, it is proven that basic traits of citizens may also influence Internet political efficacy. Kenski and Stroud (2006) found that gender, age, and education level all significantly influence political efficacy. Thus, this article sets "gender," "age," and "education level" as control variables, in order to more clearly observe the influence of other independent variables on Internet political efficacy. In addition, this study seeks to focus on "Internet political efficacy," unlike past studies that focus on political efficacy in the real world. Thus, real world political efficacy is also incorporated as control variables. Below, the research framework of this study is shown in Figure 1, while the conceptualization and operationalization of the research framework is shown in Table 1.

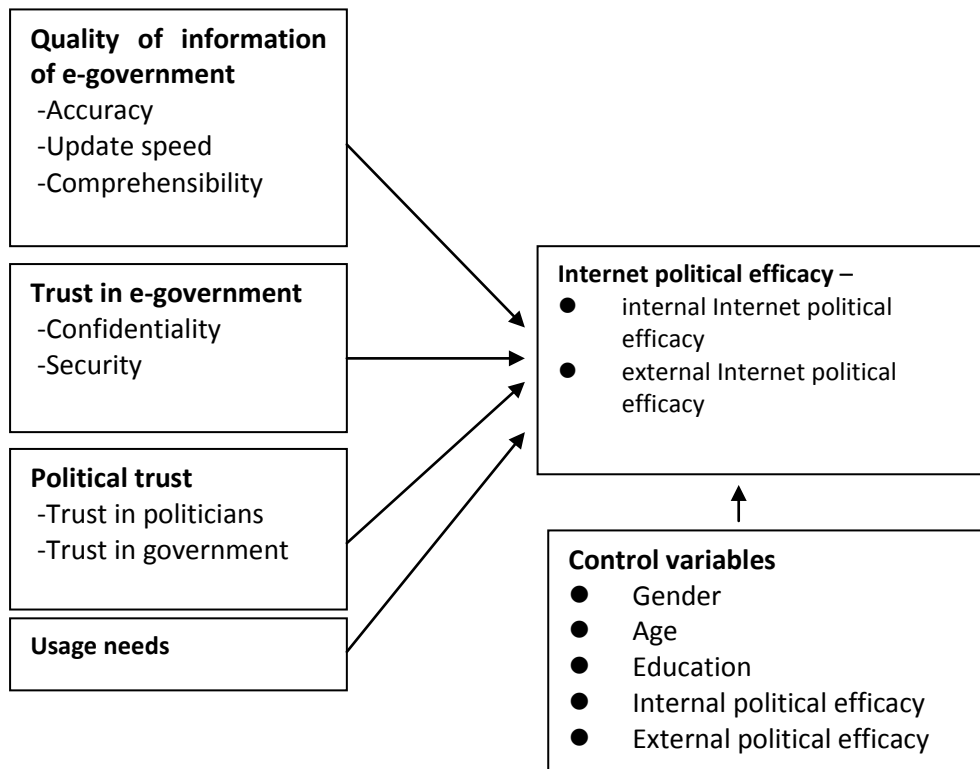


Figure 1: research framework

Source: this study

Table 1: conceptualization and operationalization of research framework

Variable		Definition	Operationalized question	Scale
quality of information	Accuracy	citizens' trust in the accuracy of the information provided by e-government websites	1. On the whole, do you think information provided by government websites are correct?	Likert scale: 1.Mostly incorrect, 2.Incorrect 3.Half and half 4.Correct 5.Mostly correct
	Update speed	citizens' trust in the information update speed of e-government websites	2. On the whole, do you think government websites update information quickly?	Likert scale: 1.Extremely slowly 2.slowly 3.average 4.quickly 5.extremely quickly
	Comprehensibility	Citizens' understanding of e-government website information	3. On the whole, do you think information provided by government websites is easy to understand?	Likert scale: 1.very hard to understand 2.hard to understand 3.neither hard nor easy 4.easy to understand 5.very easy to understand
trust in e-government	Confidentiality	Citizens' trust in e-government's ability to send online service application information only to secure servers and not lose them in the process.	4. Do you think that the government, through its provision of services using the internet, provides adequate protection for citizens' private information?	Likert scale: 1.mostly inadequate 2.inadequate 3.neither inadequate nor adequate 4.adequate 5.mostly adequate

Variable		Definition	Operationalized question	Scale
	security	citizens' trust in e-government's protection of personal private information	5. "Personal data kept in government agency computers tend to be at risk of being stolen." Do you agree with this statement?	Likert scale: 1.strongly disagree, 2.disagree 3.neither agree nor disagree 4.agree 5.strongly agree
political trust		citizens' trust in politicians	6. Do you trust what government leaders say in the television and/or in the newspapers?	Ordinal scale: 1.highly distrust, 2.slightly distrust, 3.somewhat trust, 4. highly trust.
		citizens' trust in government	7. Some say that "most of the things the government does is right", do you agree with this statement?	Likert scale: 1.strongly disagree, 2.disagree 3. neither agree nor disagree 4.agree 5.strongly agree
Usage needs		Citizens' needs for using the Internet	8. In the last six months, how many times have you looked for information on government websites?	Ratio scale (an integer larger or equal to one)
political efficacy	internal political efficacy	Whether citizens believe they have the ability to influence and participate in politics	9. Some say that "sometimes politics is so complicated, that we really don't understand it." Do you agree with this statement?	Likert scale: 1.strongly disagree, 2.disagree 3. neither agree nor disagree 4.agree 5.strongly agree
	external political efficacy	citizens' trust in the government's responsiveness to citizen needs	10. "Government officials do not care about what the general public thinks." Do you agree with this statement?	Likert scale: 1.strongly disagree, 2.disagree 3. neither agree nor disagree 4.agree 5.strongly agree
Internet political efficacy	internal Internet political efficacy	Whether citizens think they have the ability to use the Internet to participate in and influence politics	11. "By using the Internet, the general public can better understand politics." Do you agree with this statement?	Likert scale: 1.strongly disagree, 2.disagree 3. neither agree nor disagree 4.agree 5.strongly agree
	external Internet political efficacy	citizens' trust in government responsiveness toward citizen needs	12. "Because of the Internet, government officials would be more concerned about what members of the general public are thinking." Do you agree with this statement?	Likert scale: 1.strongly disagree, 2.disagree 3. neither agree nor disagree 4.agree 5.strongly agree

Source: this study

Data from this article was taken from a research sponsored by the Executive Yuan's Research, Development and Evaluation Commission, "E-Governance Impact Framework: G2C and G2B". The study surveyed residents of Taiwan who live in the 25 counties and cities, those who are over 12 years old are designated as research targets. Computer Assisted Telephone Interviews were used to conduct phone interviews. The duration of investigation was between August 17, 2009 and August 20, 2009; 2,154 valid samples were completed.

Since this study seeks to explore the influence of e-government on citizen Internet political efficacy, only citizens who have visited government agency websites are used as research subjects, of which there are 781. Of the 781 research subjects, 343 (43.8%) are male and 440 (56.2%) are female. In terms of age, it was found that 36.7% are under the age of 29, 28.5% are between the ages 30-39, and the remaining samples are over the age of 40 (34.8%). Finally, in terms of education level, the smallest group is comprised of those with an education level of under/with junior high, numbering 43 (5.5%). Those with at least a high school (vocation) level of education numbered 537 (25.7%), while the largest group is comprised of those with an education level of over/with college (68.8%). The sample structure is shown in Table 2. In the following sections, this study will use questionnaire data from this database to establish a multiple regression model to understand whether the usage of e-government affects the Internet political efficacy of citizens.

Table 2: sample structure

Variable		Number
Gender	Male	343 (43.8%)
	Female	440 (56.2%)
	Total	783 (100%)
Age	Under 29	284 (36.7%)
	30-39	220 (28.5%)
	40-49	183 (23.7%)
	Over 50	86 (11.1%)
	Total	773 (100 %)
Education	Under/with junior high school	43 (5.5%)
	High school and vocational school	201 (25.7%)
	Over/with college	537 (68.8%)
	total	781 (100%)

7 Findings

In the analysis of research findings, this study will first evaluate citizens who use e-government, in terms of their Internet political efficacy, and then proceed to use and establish a multiple regression model to understand factors that may influence the level of Internet political efficacy.

Table 3 shows that for both external Internet political efficacy and internal Internet political efficacy, most people scored middle to high (4 on a 1-5 scale) (40.5% of the citizens exhibited middle to high external Internet political efficacy; 45.3% of the citizens exhibited middle to high internal Internet political efficacy). However, there is still a considerable group of citizens who are scored middle to low (those who scored 2 on a 1-5 scale) (30.7% of the citizens exhibited middle to low external Internet political efficacy; 28% of the citizens exhibited middle to low internal Internet political efficacy). There are more subjects with high internal Internet political efficacy than there are subjects with high external Internet political efficacy. In other words, most citizens trust that the usage of the Internet can increase one's influence on politics. However, the results show that there are still doubts about whether the Internet can elevate responsiveness of the government.

Table 3: Internet political efficacy

Variable	External Internet Political Efficacy	Internal Internet Political Efficacy
Operationalized question	"Because of the Internet, government officials would be more concerned about what members of the general public are thinking." Do you agree with this statement?	"By using the Internet, the general public can better understand politics." Do you agree with this statement?
	number	number
1 highly disagree	124 (16.2%)	82 (10.7%)
2 disagree	235 (30.7%)	214 (28%)
3 neutral	6 (0.8%)	6 (0.8%)
4 agree	310 (40.5%)	346 (45.3%)
5 highly agree	90 (11.8 %)	115 (15.1%)
total	765 (100.0%)	763 (100.0%)

Note: scores for Internet political efficacy are between 1 and 5, higher the score, higher the political efficacy

Source: this study

8 Bivariate analysis

Since the variables used in this research were mostly ordinal scale data, Kendall's tau-b is used to analyze the relationships between variables. Table 4 reveals that as age decreases, internal internet political efficacy rises. (tau-b=-.089) This clearly shows that the younger generations place more confidence in the elevation

of their political understanding through internet usage. However, regarding external political efficacy, whether the government would pay more attention to and respond to citizens, the correlation is not significant. In relation to education level, the lower the education level the higher the internal internet political efficacy. ($\tau\text{-}b = -.122$) This illustrates that the effect of the internet in its promotion of political knowledge, is much more significant for less privileged groups. Nevertheless, the results were also insignificant for external internet political efficacy.

Aside from the correlation analyses concerning personal information and political efficacy above, Table 4 also reveal that apart from real-life internal political efficacy, all other independent variables showed significant positive correlation with regards to internet political efficacy. Respondents who believe, that the information on the internet is accurate, that the information on the internet updates quickly, that the information on government websites is easy to comprehend, that the safety and data protection of government websites are adequate, that government and political figures are trustworthy, would have higher internal and external internet political efficacies.

Table 4 Association Analysis

Kendall's tau-b	Internal Internet Political Efficacy	External Internet Political Efficacy
age	-.089**	-.011
Education level	-.122**	-.038
external political efficacy	.114**	.337**
internal political efficacy	.041	.024
quality of information --Accuracy	.151**	.171**
quality of information --update speed	.171**	.196**
quality of information --comprehensibility	.175**	.219**
trust in e-government --confidentiality	.193**	.213**
trust in e-government --security	.073*	.109**
trust in politicians	.107**	.341**
trust in the government	.107**	.284**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In addition to the variable analyses mentioned above, the difference in internet political efficacy in relation to gender was found to be insignificant after a chi-square test was performed.

In the following section, a linear regression analysis was performed to analyze the relationship of each individual independent variable in relation to internet political efficacy, when considering all other variables.

9 Regression model for 'External' Internet political efficacy

External Internet political efficacy refers to whether citizens believe that the e-government mechanism can increase the level of responsiveness from the government to citizen needs. As stated by Kenski and Stroud (2006), techno-optimists believe that e-government increases opportunities for interaction between citizens and government officials. Citizens can keep the government accountable through the Internet, and request them to give official responses to needs of the citizens. This is an opportunity for the elevation of citizen external political efficacy.

However, Table 5 shows that the factors affecting the external Internet political efficacy of citizens are not directly related to e-government mechanisms, but are correlated to the faiths and attitudes held by the citizens themselves. When citizens have increased trust in the confidentiality of government websites, the external Internet political efficacy also increases ($\beta = .89$, $p < .1$). The higher the political trust of citizens, the higher their external internet political efficacy. In other words, people who trust politicians ($\beta = .203$, $p < .01$) and the government ($\beta = .144$, $p < .01$), believe that the government would use Internet channels to increase its

responsibility. In addition, the higher the citizens' external political efficacy in the real world, the higher their external Internet political efficacy ($\beta=.195$, $p < .01$).

Thus, the above discussion shows that regardless of whether it is the trust in e-government, political trust, or actual external political efficacy in the real world, factors such as citizen's views and attitudes toward e-government and the actual government are not directly related to the quality of information provided by e-government. In other words, factors that affect external Internet political efficacy of citizens are not directly related to the design and operation of e-government mechanisms, but affected by abstract existing impressions of citizens toward the government. The opening of this online civic participation channel does not seem to assist in enhancing the external Internet political efficacy of citizens.

This may be because the level of external Internet political efficacy, citizens' belief in whether the government cares about the general public, is strongly tied to the responsiveness of the government, and not directly correlated to the quality of internet information provided by the government. In other words, elevation of external Internet political efficacy relies on the elevation of citizens' trust in the government. It doesn't matter if e-government can provide comprehensive and abundant information, or optimal mechanism design. If the government cannot make concrete responses to and produce real performance results for, citizen needs, the government cannot obtain trust from the citizens. In such circumstances the external Internet political efficacy of citizens would certainly be very low.

10 Regression model of 'Internal' Internet political efficacy

The regression model of internal Internet political efficacy shows (Table 5 below) that there are significant differences between factors that affect internal Internet political efficacy and factors that affect external Internet political efficacy. E-government information update speed, the usage needs of citizens and their basic traits, all influence the internal Internet political efficacy of citizens, and also affect the extent to which citizens believe that they have the ability to influence and participate in political systems.

First, when government websites have fast information update speed, citizens have higher internal Internet political efficacy ($\beta=.124$, $p < .05$). As stated by Curtice and Norris (2004), e-government allows citizens to easily obtain the latest information, which is beneficial for them to gain the necessary political knowledge, helping them feel an elevation of their own abilities. This increases the internal Internet political efficacy of citizens.

Second, it can be seen that the higher the Internet usage needs of citizens, the higher their internal Internet political efficacy ($\beta=.086$, $p < .1$). As pointed out by Tedesco (2007), the more often citizens come into contact with e-government websites, the more often they use government websites to collect information, and the higher their internal Internet political efficacy. This may be because citizens, who have higher Internet usage needs, search for information through the Internet, also have a higher desire to improve their knowledge. Thus, there is a positive influence on internal Internet political efficacy.

Finally, this study also finds that citizens with different basic traits have different degrees of internal Internet political efficacy. Kenski and Stroud (2006) found that younger male citizens have higher internal political efficacy. From the operational experience of Taiwan's e-government, citizens with lower education levels have higher internal political efficacy. This may be because citizens with higher education levels are more apathetic and disillusioned with politics; therefore they are less inclined to believe that they can affect politics. This point awaits further study.

The above discussion indicates that, unlike external Internet political efficacy, factors that affect internal Internet political efficacy are more connected to the e-government websites themselves. When there is fast website update speed, citizens can gain the latest information, and citizens would increasingly believe that they have the ability to affect politics. On the other hand, citizens who are in frequent contact with the e-government also exhibit higher internal Internet political efficacy. Thus, the e-government's quality of information is very important for the enhancement of the internal Internet political efficacy of citizens. When e-government can provide the latest practical information, citizens would be more willing to believe that they have the ability to influence and participate in politics, which would in turn increase internal Internet political efficacy.

Table 5: Linear regression models for Internal and External Internet political efficacy

Independent variable		Model I: External Internet Political Efficacy			Model II: Internal Internet Political Efficacy		
		Std. Coef.	t(p)	Collinearity statistic (tolerance)	Std. Coef.	t(p)	Collinearity statistic (tolerance)
quality of information	accuracy	-.001	-.015 (.988)	.839	.082	1.612 (.108)	.838
	update speed	.038	.777 (.438)	.804	.124*	2.398 (.017)	.806
	comprehensibility	.056	1.145 (.253)	.799	.050	.952 (.342)	.800
trust in e-government	confidentiality	.089+	1.709 (.088)	.710	.051	.931 (.353)	.710
	security	-.013	.271 (.787)	.778	-.007	.124 (.901)	.777
political trust	trust in politicians	.203***	3.645 (.000)	.615	.084	1.415 (.158)	.612
	trust in the government	.144**	2.759 (.006)	.701	.044	.783 (.434)	.702
usage needs	frequency of using government websites	-.008	-.177 (.859)	.944	.086+	1.787 (.075)	.944
control variables	gender	-.023	-.505 (.614)	.949	-.108*	-2.259 (.024)	.947
	age	-.022	-.460 (.646)	.869	-.093+	-1.862 (.063)	.867
	education level	-.008	-.174 (.862)	.888	-.193***	-3.901 (.000)	.885
	external political efficacy	.195***	3.615 (.000)	.661	.014	.244 (.808)	.657
	internal political efficacy	-.015	-.334 (.739)	.902	-.003	-.063 (.950)	.903
		Adj. R square=.224; F=9.996*** *** p <.001; ** p <.01; * p <.05; +p<0.1 n=406			Adj. R square=.125; F=5.445*** *** p <.001; ** p <.01; * p <.05; +p<0.1 n=404		

11 Conclusion

The primary purpose of this study is to understand the operations of e-government, and whether it affects the political efficacy of citizens. Unlike past literature, the dependent variable in this study is “‘Internet’ political efficacy”, which is categorized into internal and external aspects. The result demonstrates that factors that affect internal and external Internet political efficacy are different. The elevation of external Internet political efficacy factors are not directly related to the e-government mechanism, but are related to citizens’ trust in e-government, political trust, and external political efficacy. Important factors that affect internal Internet political efficacy are: e-government information update speed and citizen usage needs for e-government.

Past studies on the causal relation between technological usage and democratic participation tend to overlook the role of political efficacy. Even though the controversy over whether information technological usage would elevate democratic participation has not yet been resolved, the analysis in this study has found that information provided by e-government can effectively strengthen the internal political efficacy of the people. Although due to data limitations, this study has not been able to empirically prove the influence of these variables on democratic participation, we can make bold assumptions with the assistance of past literature. Even though this discovery may not immediately change the views of techno-pessimists, it opens another window for the study of e-democracy.

This study suggests that in practice, with the rapid development of e-government, the government should also emphasize how to elevate the political efficacy of citizens through Internet mechanisms, in order to further promote civic participation and cultivate a civil society. On the one hand, the quality of information in e-government affects citizens in determining whether they have the ability to influence and participate in politics. Thus, it is very important to provide the most practical information as quickly as possible. External Internet political efficacy is closely connected to citizen trust, as pointed out by Coleman, Morrison and

Svennevig (2008), and Lee (2006). Although e-government could increase interaction between citizens and the government, if the government does not have sufficient responsiveness toward citizens, it would accumulate negative interaction experiences between the citizens and the government. This would create a serious and negative influence on external Internet political efficacy. Therefore, aside from enhancing the quality of e-government websites, it should also be examined whether the government can deal with citizen needs that stem from rapid growth due to the Internet channels. When citizens can more easily express their opinions on the Internet, the government should also strengthen its ability to respond to a broad range of needs. Only then would the positive effects of e-government outweigh its negative impacts.

In terms of research, this study hopes to supplement the insufficient attention paid to Internet political efficacy in the past, but there are still improvements to be made in terms of sample selection and the establishment of the research framework. Future studies could consider using more representative samples in a more comprehensive research framework, extending the model from political efficacy to later democratic participation activities would make the research results more valuable.

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